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THESIS

**TOWARD A COMMON STANDARD: THE ROLE
OF LAW ENFORCEMENT AT WMD INCIDENTS**

by

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September 2013

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AT WMD INCIDENTS**

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ABSTRACT

This thesis examines the role of law enforcement personnel at weapons of mass destruction (WMD) and hazardous materials incidents with regard to WMD training, standards, and preparedness, and identifies gaps and problems in current local law enforcement WMD response preparedness. Different models of local law enforcement WMD response are analyzed to compare with the New York City model, and the U.S. Bomb Squad and United Kingdom law enforcement chemical/biological/radiological/nuclear training programs are examined as examples of successful national preparedness response programs. The implications of this thesis indicate a need for a national strategy for local law enforcement WMD training, equipment and operating procedures to better coordinate response efforts between local law enforcement agencies at WMD incidents.

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EXECUTIVE SUMMARY

New York City (NYC) has been the target of domestic and foreign terrorism since its beginning four centuries ago, and the last decade has proven no exception. Local police agencies have dedicated significant resources to train and equip their personnel to successfully prevent, defend against and defeat terrorism attempts against NYC and its populace. NYC and its immediate municipal neighbors differ significantly from some other cities since it mandated the local police department is in charge of weapons of mass destruction (WMD) incidents solely, through its Citywide Incident Management System.

This thesis examines the role of law enforcement personnel at weapons of mass destruction and hazardous materials incidents with regard to WMD training, standards and preparedness for the purpose of identifying gaps and problems in current local law enforcement WMD response preparedness. WMD preparedness training for local law enforcement agencies currently follows the scope and role of local enforcement responsibilities at WMD incidents, which is defined by local municipalities' individual emergency management policies and guidelines. The wide variety of training given to local law enforcement personnel related to local law enforcement WMD response contributes to the lack of coordination between local law enforcement agencies at WMD incidents. The lack of national standards for law enforcement agencies regarding local law enforcement WMD response personnel for training, equipment and operating procedures adds greatly to the lack of coordination between local law enforcement agencies at WMD incidents. The lack of a national standard for local law enforcement preparedness for WMD incidents reflected in the current disparity of knowledge, skills and abilities of local law enforcement agency personnel regarding WMD preparedness is indicative of the pressing need for the development of a mandatory national law enforcement WMD response preparedness standard that matches law enforcement agencies' expected competencies at a WMD incident.

Different models of local law enforcement WMD response are analyzed to compare with the New York City model, utilizing four different cities' law enforcement WMD response capabilities as examples. The four different models examined include

law enforcement utilizing only non-law enforcement personnel for primary WMD response capabilities; law enforcement working jointly with non-law enforcement personnel for joint primary WMD response capabilities; law enforcement working solely with law enforcement personnel for primary WMD response capabilities; and law enforcement working solely with law enforcement personnel for hazmat-specific capabilities. The U.S. Bomb Squad and United Kingdom law enforcement CBRN training programs are examined as examples of successful national preparedness response programs. The U.S. Bomb Squad's credentialing process is studied as a model for a law enforcement national credentialing program for WMD response, and the United Kingdom law enforcement CBRN training programs are reviewed as a model for national law enforcement WMD response training. The implications of this thesis indicate a need for a national strategy for local law enforcement WMD training, equipment and operating procedures to better coordinate response efforts between local law enforcement agencies at WMD incidents.

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I. INTRODUCTION

A. BACKGROUND

The growing threat of terrorists using weapons of mass destruction (WMD), as well as hazardous materials (HazMat) both as weapons and in criminal activities, has significantly altered the traditional philosophies of HazMat emergency response for the law enforcement community.¹

Since the 1995 AumShinrikyosarin nerve agent attacks in Tokyo's subway system, law enforcement agencies worldwide have realized the need to have sufficient weapons of mass destruction (WMD) response capabilities to adequately address terrorist incidents involving the intentional use of these substances to cause loss of life and property.² The anthrax attacks of 2001 only heightened that concern.³ At the local, state and federal levels, law enforcement agencies have similar WMD threats and yet have dissimilar, uncoordinated capabilities, equipment and training.⁴ There are responsibilities specific to law enforcement at terrorist incidents involving chemical/biological/radiological/nuclear (CBRN) materials, and these responsibilities have expanded since 9/11—overall site management, evidence preservation and sampling, and criminal investigation. The problem has two components:

1. No governmental standard or credentialing currently exists for local law enforcement WMD hazardous materials response teams;
2. Local law enforcement WMD HazMat response capabilities nationally are uneven and fundamentally distinct.

The ramifications for these deficiencies are significant. The lack of a national standard for local law enforcement WMD response teams equates to depending solely on the local, parochial response mechanisms that currently exist regardless of the magnitude and complexity of the WMD threat. Voluntary consensus standards have traditionally

¹ Patrick, Steven, "Law Enforcement and Hazmat/ WMD Emergency Response," *The FBI Law Enforcement Bulletin* 7, no. 3 (March 2008): 16.

² Carrus, W. Seth. *Bioterrorism and Biocrimes: The Illicit Use of Biological Agents since 1900* (Washington, DC: Center for Counterproliferation Research, National Defense University, 2001).

³ Homeland Defense Business Unit, *Biological Incident Operations: A Guide for Law Enforcement* (Aberdeen Proving Ground, MD: U.S. Army Research, Development and Engineering Command, 2004).

⁴ Canada, Benjamin, *Homeland Security: Standards for State and Local Responders* (CRS Report RL31680) (Washington, DC: Congressional Research Service, 2003).

focused on law enforcement agencies having an “awareness” or defensive role, which is simply getting officers or civilians out of a hot (hazardous) zone, and not conducting operations within.⁵

B. TOWARD A COMMON STANDARD

The 2002 *National Strategy for Homeland Security* proposed that the Department of Homeland Security develop “national standards for emergency response training and preparedness,” including a first responder certification program, a national training program, and equipment standards.⁶ Unfortunately mandatory standards were not enforced, relying instead on a defacto process that allowed municipalities based on jurisdiction to develop their own standard operational procedures, training components, and equipment requirements.⁷ The United States still utilizes a hodgepodge national approach to local law enforcement HazMat response capabilities. In 2003, Ben Canada noted in “Homeland Security: Standards for State and Local Preparedness” that:

A comprehensive federal policy on preparedness standards for local law enforcement could address at least two issues. First, it could address the development and maintenance of preparedness standards that meet national preparedness goals. Second, it could promote state and local adoption of standards...these national preparedness standards can be described in terms of scope, development process, and user community. They can include training competencies, equipment requirements, and operational procedures.⁸

The past 10 years have seen a growth of non-standardized policies, training and equipment for local law enforcement agencies regarding WMD incident response. Although the National Incident Management System (NIMS) was designed to further coordinate domestic incident response preparedness through “a core set of concepts, principles, procedures, organizational processes, terminology, and standard requirements applicable to a broad community of NIMS users,” the fact remains that when it comes to

⁵ Canada, *Homeland Security*, 7.

⁶ Office of Homeland Security, *National Strategy for Homeland Security* (Washington, DC: Office of Homeland Security, 2002), 44.

⁷ Canada, *Homeland Security*, 5.

⁸ *Ibid.*, 8.

the topic of WMD incident response, local law enforcement agencies nationwide lack that very coordination.⁹ The following example highlights the dual problems of local law enforcement agencies' lack of protocols/equipment/training standardization and uneven response capabilities regarding WMD incident response.

**C. AN EXAMPLE OF MULTI-AGENCY COORDINATION PROBLEMS:
NYC FIRST RESPONDER AGENCIES AND NON-NYC FIRST
RESPONDER AGENCIES, OR CIMS VERSUS NIMS**

Even in larger metropolitan areas, the lack of standardized protocols, equipment and training makes it difficult to share resources across jurisdictional borders. For instance, in New York City, the crux of multi-agency coordination problems lies in the differences in New York City's Citywide Incident Management System (CIMS) versus NIMS, of which the following are examples: CIMS assigns incident command and responsibility for specific types of incidents to the agencies whose core competencies are appropriate for the incidents. NYC enjoys an emergency management system that has some first responder agencies with similar capabilities, requiring the designation of (agency) incident commander through the CIMS' agency matrix.¹⁰ This agency matrix is important in determining which first responder agency is in charge of incidents where multiple agencies have an overlap of skill sets, called "Core Competencies" in CIMS.¹¹ CIMS further lists the "primary agency" as the agency "designated to have overall responsibility of an incident, including overall management of strategic and tactical operations... and will coordinate with supporting agencies to successfully achieve incident objectives."¹² The primary agency designated at chemical, biological, radiological, nuclear/hazardous material incidents is the NYPD, until "the NYPD determines that there is no actual or suspected criminal activity or terrorism."¹³ The

⁹ Department of Homeland Security, *National Incident Management System*, 2008, Federal Emergency Management Agency, retrieved May 18, 2010, from http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf.

¹⁰ City of New York, "CIMS: Primary Agency Matrix," 2013, City of New York, retrieved June 10, 2010, from http://www.nyc.gov/html/oem/html/about/cims_matrix.shtml [http](http://www.nyc.gov/html/oem/html/about/cims_matrix.shtml)

¹¹ Ibid.

¹² Ibid.

¹³ Ibid.

“CBRN/HazMat” core competencies of the NYPD include: overall site management, assessment, and investigations for criminal activity or terrorism.¹⁴ The developers of CIMS likely realized the importance of local law enforcement control of criminal or terrorist incidents involving WMD, and the already existing robust HazMat capabilities and experience residing within the NYPD’s Emergency Service Unit regarding WMD response and mitigation undoubtedly played a role in that decision-making process. As early as 1962, during the threat of impending nuclear war, the Emergency Service Unit was recognized as the primary agency in charge of NYC WMD response:

In a master mobilization plan drawn up in 1962 for major disasters, the ESD [Emergency Service Division] occupies the number one position as the “forward operation” to spearhead search and rescue efforts...the unit’s extensive array of RADIAC (Radioactivity Detection Identification and Computation) equipment is also geared to cope with potential accidents at any of hundreds of university research installations, hospital laboratories and industrial plants throughout the city that employ radioactive materials in their work.¹⁵

The NYPD’s many other specialized units have different responsibilities throughout the life cycle of a major incident, from initial response to demobilization of resources.¹⁶ The following CIMS graphic displays the life cycle of a multi-agency incident in New York City.¹⁷

¹⁴ Ibid.

¹⁵ Egan, Cy. *Some Very Special Men: The Emergency Service to the Rescue*. (1st ed.) (New York: Harper & Row Publishers, 1974), 226–227.

¹⁶ Hanson, Joel. *Radiological Dispersal Device Primer: From a Terrorist’s Perspective*, master’s thesis, Air War College, Air University, Maxwell Air Force Base, AL, 2008.

¹⁷ New York City Office of Emergency Management, *New York City Citywide Incident Management System* (New York: New York City Office of Emergency Management, 2005).

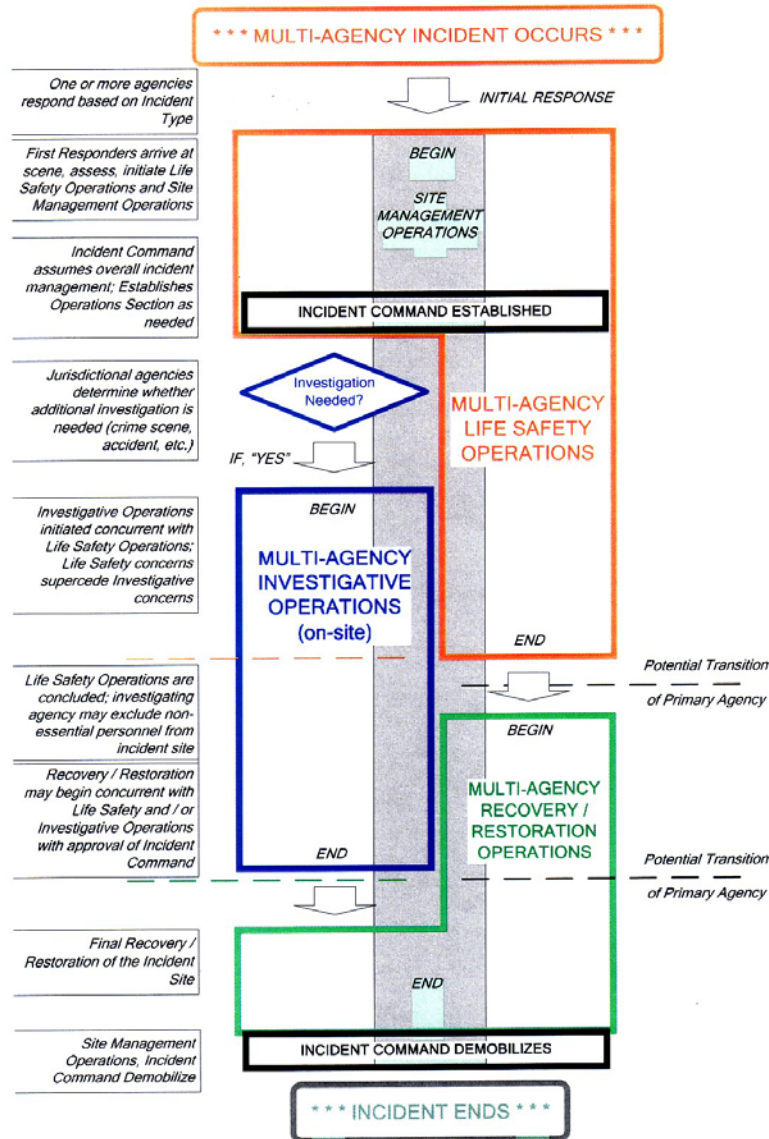


Figure 1. NYC Multi-Agency Response Incident Life Cycle

Since, however, the agency matrix is not a part of NIMS it has the potential to complicate incident command and control for emergency management agencies for municipalities unfamiliar with CIMS when involved in multi-jurisdictional incidents:

1. CIMS has an operational construct known as “Unified Operations Section” as opposed to NIMS’ “Operations Section.”¹⁸ The differences are not in name alone, as a Unified Operations Section is composed of

¹⁸ City of New York, “CIMS: General ICS Organization Structure,” last modified 2010, City of New York, retrieved March 10, 2011, from http://www.nyc.gov/html/oem/html/about/cims_ics.shtml.

operations section chiefs from different disciplines (fire, EMS, police) as opposed to NIMS' operations section deputy chiefs. The NIMS' Operation Section utilizes representatives from each discipline and/or jurisdiction as either chief or deputy chief depending on the nature of the incident. These individuals are usually co-located and work together for a coordinated multi-agency, multi-jurisdictional response.

2. CIMS utilizes safety officers from each representative agency with no lead Safety Officer in control. This contrasts with the NIMS definition of a sole Safety Officer at an incident with an unlimited number of assistant Safety Officers who do not have the authorities of the sole safety officer. This would include being unable to stop operations due to potential dangerous conditions.
3. CIMS has a robust intelligence/investigation element which is heavily related to the duties of law enforcement investigative personnel. This element can function as a single unit up to and including a section.
4. CIMS contains unique terminology at odds with NIMS. An example is the replacement of the NIMS' term "division," which defines a geographical area, with the term "sector." This is due to historical use of the term "division" in New York City to mean an administrative portion of city government, while sector historically meant a geographical area.

These issues will not necessarily be apparent when New York City resources are utilized simply for logistical support, but have the potential to become barriers when New York City first responder agencies have command and control roles at multi-jurisdictional incidents.

The result of over \$31 billion spent by the Department of Homeland Security through preparedness grants for equipment and training since 2003; the introduction of a domestic national incident management system in 2004; and the many thousands of first responders who have participated in federal WMD training programs have not been enough to develop a standardized local law enforcement response to WMD incidents nationally.¹⁹ Former New York City Office of Emergency Management Commissioner Jerry Hauer commented, "There is not one city in the country that is even close to prepared for dealing with even a small nuclear event."²⁰ The issue of standardizing local

¹⁹ Napolitano, Janet. "Remarks as Prepared by Secretary Napolitano to New York City First Responders," September 10, 2010 [news release], U.S. Department of Homeland Security, retrieved January 13, 2011, from http://www.dhs.gov/ynews/speeches/sp_1284133372649.shtm.

²⁰ Emily Friedman, "With WMD Attack Likely, Can the U.S. Cope?" *ABC News*, December 3, 2008, retrieved February 2, 2010, from <http://abcnews.go.com/print?id=6378675>.

law enforcement WMD incident preparedness and response on a national scale requires further exploration.

D. RESEARCH QUESTION

How does current local law enforcement WMD response preparedness align with current WMD threats? This thesis examines the role of law enforcement personnel at Weapons of Mass Destruction and hazardous materials incidents with regard to WMD training, standards and preparedness, and identifies gaps and problems in current local law enforcement WMD response preparedness. Different models of local law enforcement WMD response are examined to compare with the New York City model, and the U.S. Bomb Squad and United Kingdom law enforcement CBRN training programs are examined as examples of successful national preparedness response programs.

1. Significance of Research

Local law enforcement agencies need to be able to efficiently share resources across jurisdictional lines, particularly in rural areas that do not normally have enough resources to handle large WMD incidents. The potential impact of developing a national policy addressing consistent protocols, training and equipment for law enforcement agencies responding to WMD incidents would be the potential exponential growth of resilience of local law enforcement agencies to WMD incidents through resource sharing as outlined in the NIMS.²¹ In a recent “Bio-Response Report Card” of national preparedness The BiPartisan WMD Terrorism Research Center noted:

Strengthening the nation’s preparedness and response capabilities for large-scale events will significantly improve the grades (response capabilities) for small-scale biological events...the best return on investment, in terms of cost, feasibility, national security, and saving lives is to change the Ds to Cs on the next report card.

²¹ Federal Emergency Management Agency, “NIMS: Resource Management,” last modified 2010, Federal Emergency Management Agency, retrieved January 2, 2011, from <http://www.fema.gov/emergency/nims/ResourceMngmnt.shtm>.

Based on the deficiencies identified in this assessment, the WMD Center recommends concentrating our bio-response efforts on the following three strategic priorities:

- Leadership that inspires confidence, commitment, and unity of effort;
- Mobilizing a “whole of nation” bio-response capability; and
- Sustained investment in purpose-driven science.²²

The untold millions of dollars and thousands of local law enforcement agency personnel hours spent on handling “suspicious powder” incidents alone would indicate a serious financial imperative to develop a national approach for local law enforcement agency WMD incident response.²³ Without the ability to share resources due to differing protocols, equipment and training, local law enforcement agencies can only contribute to the already substantial costs involved in responding to WMD incidents due to the unnecessarily complicated aspects of coordinating dissimilar local law enforcement agency capabilities.

2. Hypothesis

This thesis hypothesizes that the development of a national policy mandating standardization of policies, equipment and training for local law enforcement WMD response would effectively create a successful national preparedness response program for WMD incidents. Different models of local law enforcement WMD response are analyzed to compare with the New York City Emergency Service Unit WMD response model, and the U.S. Bomb Squad and United Kingdom law enforcement CBRN training programs are analyzed as examples of successful national preparedness response programs.

3. Arguments

The literature offers little evidence that policymakers at the federal, state or local levels have considered the benefits of standardized local law enforcement response to

²² Bipartisan WMD Terrorism Research Center, *Bio-Response Report Card: 21st Century Biological Threats*(Washington, DC: The WMD Center 2011), The WMD Center, 60, retrieved February 3, 2012, from <http://www.wmdcenter.org/wp-content/uploads/2011/10/bio-response-report-card-2011.pdf>.

²³ “White Powder Jobs Are Now Epidemic,” *American Police Beat*, December 13, 2008, 13.

WMD incidents or the challenges of continuing a decentralized, non-standardized approach. In fact, much emphasis has been placed on getting as much federal DHS grant funding to the “local” municipal level for WMD preparedness without federal standards regarding training, equipment or protocols to accomplish the homeland security mission.²⁴ This gap in local law enforcement WMD preparedness is examined through a historical perspective of recent U.S. preparedness efforts, with the NYPD’s efforts to address WMD preparedness used as an example. The lack of WMD detection equipment standards is explored, and four local law enforcement agencies’ HazMat teams are used as examples of the current types of local law enforcement response models in use nationally. The NFPA’s evolution of WMD response standards from discipline-specific to mission-centric is explored, and the (proposed) national law enforcement deployment teams are compared and contrasted to national local law enforcement WMD preparedness efforts. A comparison of the American approach to local law enforcement WMD incident response to the British approach is conducted, as well as an examination of a successful national approach to local law enforcement standardized protocols, training, equipment and credentialing: American bomb squads. A possible solution for standardized training will be considered through an examination of the National Training Program, with an emphasis on leveraging currently existing first responder WMD preparedness programs into a national program for local law enforcement agency officers, as well as utilizing the credentialing of bomb squads as a model for credentialing local law enforcement WMD incident response teams.

E. THEORETICAL SENSITIVITIES

The author’s own professional experiences as a supervisor for a major urban law enforcement WMD response unit have been useful in understanding the challenges and potential dangers at WMD incidents, particularly related to inter-agency cooperation, mutual aid, and law enforcement training needs for a WMD incident.

²⁴ *U.S. Senate Select Committee on Intelligence: Implementing Recommendations of the 9/11 Commission Act of 2007*, 2010, U.S. Senate Committee on Intelligence, retrieved June 3, 2011, from <http://intelligence.senate.gov/laws/pl11053.pdf>.

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II. LITERATURE REVIEW

A. LACK OF STANDARDIZATION IN THE MODERN ERA OF U.S. LOCAL LAW ENFORCEMENT WMD PREPAREDNESS

There has been much discussion post-9/11 about improving the first responder community's capabilities to respond to WMD incidents in congressional hearings, trade journals, governmental studies and academic research to "prevent, prepare, respond and recover" from both terrorist and natural disasters. Yet even with substantial efforts and funding spent on this issue during the past nine years, there remains a major national preparedness gap due to the lack of national standards for local law enforcement response to WMD incidents.²⁵ When Florida Congressman Kendrick Meeks asked NYPD Commissioner Raymond W. Kelly about this, by comparing basic law enforcement standards to the lack of DHS training standards, the Commissioner stated:

I believe we should have standards. The Department of Homeland Security should have standards and attempt to have a consistency in training throughout the country. I can tell you that we use many of the skills that our officers receive on a very regular basis in New York City because of the size of the city and the activities that go on there. So we are using a lot of the skills, so in a way we are able to judge the effectiveness of the training almost on a daily basis in New York. But yes, sir, I agree that there should be some consistency and there should be some across-the-board standards.²⁶

This was at the time an acknowledgement of an old problem (lack of law enforcement national preparedness and response standards) within a new post-9/11 era. In 1996, The Nunn-Lugar-Domenici Defense against Weapons of Mass Destruction Act ushered in the modern era of first responder preparedness for WMDs on a national

²⁵ Government Accountability Office, *First Responders' Ability to Detect and Model Hazardous Releases in Urban Areas is Significantly Limited* (GAO-08-180) (Washington, DC: Government Accountability Office, 2008).

²⁶ Joint Hearing before the Subcommittee on Emergency Preparedness, Science, and Technology of the Committee on Homeland Security, *The National Training Program: Is Anti-Terrorism Training For First Responders Efficient and Effective*, 109th Cong., 1st sess. (2005) (statement of Raymond W. Kelly, Commissioner of the New York Police Department).

scale.²⁷ This legislation mandated WMD training for first responders in the most populous 120 U.S. cities, without regard to the level of terroristic threats to or actual incidents in those cities.²⁸ By 1999, Congress authorized the United States Attorney General to assist state and local public safety personnel with training and equipment to manage terrorist incidents, which was due in part to the recognition that local responders would be the initial responding governmental authorities to such incidents.²⁹ The Attorney General gave this responsibility to its Justice Department, which implemented this training through the Office of Justice Programs' Office for Domestic Preparedness. The Department of Homeland Security Federal Emergency Management Agency's National Training and Education Division currently fulfills this role.³⁰ Although WMD training has been offered to law enforcement by the federal government since 1997, no credentialing apparatus related to that training currently exists.³¹ Accountability issues regarding federal counter terrorism training have instead focused on:

- possible duplication of federal counter-terrorism training programs
- the determination of Department of Homeland Security (DHS) counterterrorism training priorities, and
- possible redundancy and coordination of DHS counterterrorism training programs³²

Even though local law enforcement personnel may currently enroll in many DHS-sponsored courses related to HazMat training, the training process itself does not result in an official certification or credentialing of competency over a specific body of knowledge

²⁷ Jeff Ryan and Jan Glarum, *Biosecurity and Bioterrorism: Containing and Preventing Biological Threats* (New York: Elsevier, 2008).

²⁸ Ibid.

²⁹ U.S. General Accounting Office, *Combating Terrorism: Observations on the Nunn-Lugar-Domenici Domestic Preparedness Program* (Washington, DC: U.S. General Accounting Office, 1998), U.S. Government Accountability Office, retrieved January 10, 2010, from <http://www.gao.gov/archive/1999/ns99016t.pdf>

³⁰ Federal Emergency Management Agency, "FEMA National Training and Education Division," last modified 2010, Federal Emergency Management Agency, retrieved May 3, 2011, from <https://www.firstrespondertraining.gov/TEI/aboutTEI.jsp>.

³¹ Ibid.

³² Reese, Shawn. *Federal Counter-Terrorism Training: Issues for Congressional Oversight* (Washington, DC: Congressional Research Service, 2006), CRS-2.

and/or attainment of specific WMD response-related skills.³³ Hence the training, experience and abilities of law enforcement personnel regarding response to WMD incidents remain non-transferable for purposes of mutual aid.

B. THE NEED FOR THE DEVELOPMENT OF LOCAL LAW ENFORCEMENT HAZMAT CORE COMPETENCIES: THE NEW YORK CITY EXAMPLE

The ongoing conundrum within the law enforcement community as evidenced by the variety of local law enforcement WMD response models is whether local law enforcement agencies should be in charge of terrorist incidents involving WMD materials, or whether other local agencies (fire/HazMat) should be, due to the traditional HazMat response role of the latter disciplines involving both life safety and HazMat core competencies. When asked why the NYPD should be the sole agency in charge of WMD incidents, Commissioner Raymond W. Kelly stated, “our uniformed personnel have the necessary training and equipment to undertake this responsibility.”³⁴

Just as importantly, New York City’s lead political authority, the Mayor acknowledged through his support of New York City’s Citywide Incident Management System the necessity for local law enforcement to manage criminal and/or terrorist WMD incidents, which could be done effectively only through the NYPD’s already existing HazMat and counter terrorism capabilities. These core competencies are displayed in a departmental video for the NYPD’s Emergency Service Unit and are reflective of the determination of a local law enforcement agency to develop the protocols, master HazMat competencies and invest in specialized WMD detection equipment necessary to adequately respond to and manage criminal and terrorist incidents involving WMD materials within its jurisdiction.³⁵

³³ Joint Hearing before the Subcommittee on Emergency Preparedness, Science, and Technology of the Committee on Homeland Security, *The National Training Program*.

³⁴ New York City Council, “Transcript of the Minutes of the Committee on Public Safety Committee” (internal document, New York City Council, New York, May 9, 2005), 39–40.

³⁵ “Inside The NYPD: The Emergency Service Unit Episode 10,” YouTube video, posted 2010, retrieved July 11, 2011, from <http://www.youtube.com/watch?v=Cp1HC38PL4Q&feature=channel>.

C. THE NYPD'S PRIMARY WMD RESPONSE ENTITY: THE EMERGENCY SERVICE UNIT

The Emergency Service Unit was formed in 1926, as NYPD Commissioner Richard E. Enright stated in 1926, to “save imperiled lives in cases of emergency by special apparatus with which they are equipped.”³⁶ This part-time status unit was known then as the Reserve Squad until 1930, at which time the unit was given full-time status and renamed the Emergency Service Division.³⁷ The initial patrolmen to enter this rescue squad were trained in a variety of emergency equipment to handle a multitude of scenarios, including the use of tear gas to quell riots; extricating individuals trapped by debris or under a train; rescuing a horse out of a river; utilizing special weapons such as machine guns for tactical situations; or assisting individuals in overturned boats, to name but a few. In a show of interagency cooperation, in September 1928 officers from the Reserve Squad were requested by the FDNY Assistant Chief Joseph B. Martin to train with FDNY’s Rescue Squad’s 1 and 2 for thirty days to “familiarize them [Reserve Squad members] with the use of tools and appliances of the rescue squads, and create greater cooperation between the rescue companies of the Fire Department and the emergency squads of the Police Department.”³⁸ Although NYPD Commissioner Enright at the time stated that the NYPD’s rescue units were formed to “save the Fire Department emergency squadrons from unnecessary duty,” the Emergency Service Unit’s utility became apparent almost as soon as its start, as the unit answered nearly three thousand calls within its first six months of service.³⁹ The dedication of the ESD’s officers was apparent by the many rescues that were made utilizing the over 100 pieces of equipment that were added to their response trucks, including for example acetylene torches and

³⁶ “To Form New Police Squad,” *The New York Times*, September 15, 1926, retrieved April 3, 2013, from <http://select.nytimes.com/gst/abstract.html?res=FB0D14FF345E1B7A93C7A81782D85F428285F9>.

³⁷ “Whalen Sets up Emergency Squads,” *The New York Times*, March 11, 1930, retrieved April 3, 2013, from <http://query.nytimes.com/mem/archive/pdf?res=F20C13F93B5D157A93C3A81788D85F448385F9>.

³⁸ “Policemen to Study Rescues with Fire Department Squad” *The New York Times*, August 29, 1928, retrieved April 3, 2013 from <http://query.nytimes.com/mem/archive/pdf?res=F20F16F73458167A93CBAB1783D85F4C8285F9>.

³⁹ “Police Rescue Squads Dash out on Odd Tasks” *The New York Times*, May 3, 1931, retrieved April 3, 2013, from <http://query.nytimes.com/mem/archive/pdf?res=F30B1FFF395C117A93C1A9178ED85F458385F9>.

oxygen tanks.⁴⁰ ESU also handled tactical situations exceedingly well, with a local newspaper at the time proclaiming that “there is probably no more complete an outfit in existence.”⁴¹ Although FDNY had developed rescue units fifteen years prior to the 1930 creation of the full-time Emergency Service Division, the creation of a police rescue squad allowed for an additional entity within New York City to address the multitude of emergency situations confronting the New York City populace. A local newspaper reported, “Previous to the installation of the first of these emergency trucks, New York was without adequate protection in emergencies in which immediate help was needed.”⁴² In 1948, by mayoral order the Police Department was put in charge of all emergencies except fires, in large part due to the exceptional performance of the Emergency Service Division in handling its varied rescue assignments.⁴³ Author Cy Egan wrote the following about the ESD’s role at WMD incidents:

The policemen detailed to the work carry dosimeters and ion chambers to measure radiation levels and mark off danger areas for evacuation. All wear ray-absorbing film badges designed to record the amount of radiation each man receives during any particular job. The specially coded badges undergo laboratory analysis after each incident so that policemen threatened with dangerous overexposure can be withdrawn from the work. The ESD maintains close liaison with the Atomic Energy Commission to update training and methods for handling nuclear mishaps, which are expected to grow in coming decades with increasing use of atomic reactors to generate power.⁴⁴

During the 1980s, the Koch administration considered giving the FDNY a wider role at car accidents, building collapses, water rescues and gas leaks due to increases in drug-related crime putting pressure on the NYPD in the form of increased response times to emergency incidents; fire incidents, in contrast, had decreased by one-third over the

⁴⁰ “Emergency Squad Work,” *The New York Times*, February 24, 1929, retrieved April 3, 2013, from <http://select.nytimes.com/gst/abstract.html?res=F30614FC3555167A93C6AB1789D85F4D8285F9>.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid.

⁴³ Todd Purdum, “Race to Rescue: Police-Fire Feud Dates from the 30’s,” *The New York Times*, June 9, 1988, retrieved April 3, 2013, from <http://www.nytimes.com/1988/06/09/nyregion/race-to-rescue-police-fire-feud-dates-from-the-30-s.html?pagewanted=all&src=pm>

⁴⁴ Cy Egan, *Some Very Special Men*.

preceding decade.⁴⁵ Mayor Koch ultimately decided not to proceed with those recommendations, and periodically jurisdictional disputes have arisen due to the similar capabilities of some aspects of FDNY rescue units and the Emergency Service Unit, with the most recent iteration in the form of resistance to NYPD single agency command at WMD incidents (McGeary, 2007) (Esposito, 2011) as dictated by the New York City Citywide Incident Management System. The similarities end when discerning between hazmat incidents versus WMD incidents, whereas WMD incidents, due to their very nature, involve terrorists inclined to kill and injure as many civilians as possible; it would be reckless and irresponsible to send unarmed medical, fire or other rescue workers into a WMD environment until it is tactically safe enough for them to operate. To do otherwise would be to risk these same rescue workers becoming unnecessary casualties of secondary or otherwise unanticipated attacks. An example would be a “dirty bomb” incident followed immediately by terrorist active shooters hoping to kill as many responding rescuers as possible. Today’s Emergency Service Unit training prepares its officers with capabilities surpassed by no other local emergency response agencies, including minimal competency requirements of EPA Hazardous Materials Technician certification; NYS Emergency Medical Technician-Basic certification; Professional Association of Diving Instructors’ Open Water Rescue Diver certification; ROCO Rope Rescue Technician certification; one month of Special Weapons and Tactics training; and a multitude of additional skill sets which must also be mastered before the Emergency Service Unit candidates are allowed to graduate from the Emergency Service Unit Specialized Training School’s six-month training program.

D. THE LACK OF MANDATORY FEDERAL CHEMICAL/BIOLOGICAL/RADIOLOGICAL DETECTION EQUIPMENT STANDARDS

The Department of Homeland Security has for the past 11 years been tasked with providing grants for state and local governments to purchase chemical/biological/radiological detection equipment to further this nation’s counter terrorism preparedness efforts. It does this, however, in a way that diminishes the ability

⁴⁵Purdum, “Race to Rescue.”

for municipalities to conduct mutual aid; that is, compare “apples to apples” when sharing resources across municipalities. NIMS’ resource sharing in principle works when defining resources by “type” and “kind,” but becomes intricately more difficult to determine local law enforcement WMD response capabilities when CBRN detection equipment is bought by different manufacturers with different capabilities, operating considerations, models, features and limitations.⁴⁶ As DHS has no regulatory authority to enforce mandatory standards for state and local law enforcement agencies which buy CBRN detection equipment, it has no ability to develop mandatory CBRN detection equipment standards for the country’s local law enforcement community.⁴⁷

⁴⁶Government Accountability Office, *First Responders’ Ability to Detect*.

⁴⁷ Ibid.

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III. METHODOLOGY

A. ANALYSIS OF PREPAREDNESS DISPARITIES AMONG CURRENT MODELS OF LOCAL LAW ENFORCEMENT WMD RESPONSE

An examination of the most populated 100 U.S. cities reveals four different models of local law enforcement preparedness for WMD incidents.⁴⁸ The first model is for law enforcement agencies to have very little organized response capabilities, relying instead on other first responder agencies, usually the local fire service and/or HazMat teams, to handle HazMat incidents. This accounts for approximately eighty percent of the law enforcement agencies for the 100 most populated U.S. cities examined by the author.

Other law enforcement agencies have multi-agency HazMat response teams, consisting of a combination of HazMat trained local/state/federal law enforcement, fire service, and/or local HazMat unit team members working together at HazMat incidents. An example includes the Miami-Dade Florida Police Department:

1. Miami Dade Hazardous Materials Crime Unit

The HMCU investigates incidents of a deliberate and intentional nature involving hazardous materials. In order to facilitate complete and consistent investigations, the Hazardous Materials Crime Unit merges three major duties. This includes HAZMAT response where emergency teams don their state of the art personal protective gear and use hazardous material and chemical agent detection systems to monitor contaminants for safety and identification purposes. Scientists conduct on-site chemical forensic testing to characterize and identify toxic constituents and predict environmental and human health risks as a result of chemical discharge. The second duty includes chemical crime scene processing where scenes are thoroughly combed for prints, tracks, and any other evidence that might lead to a possible suspect. The third duty includes research, surveillance, and interviewing prospective witnesses and suspects. Unit scientists also interpret technical data and analytical results and authenticate evidence. The HMCU also provides guidance

⁴⁸ Based on author's examination of most populated 100 U.S. cities' and 38 states' law enforcement agency websites.

on scientific matters and policies affecting the Department; provides training for department-wide response to science crimes; and coordinates and assists other investigative entities. The unit works in conjunction with various other local, state, and federal agencies committed to the investigation and deterrence of hazardous materials crimes.⁴⁹

Still other law enforcement agencies have a “combination” of roles—SWAT or bomb squad teams whose personnel are also trained as HazMat technicians. An example would be the found using the Phoenix Arizona Police Department’s Bomb Squad training requirements.

2. Phoenix Arizona Police Department Bomb Squad

Bomb Technicians must be familiar with electronics, x-ray interpretation, hazardous materials and other job-related skills. Most technicians are also certified HazMat technicians through the state of Arizona.⁵⁰

Some police agencies have stand-alone HazMat teams consisting of law enforcement officers trained to the HazMat technician level. An example would be the New Jersey State Police Department:

3. New Jersey State Police Department Hazardous Materials Response Unit

The Hazardous Materials Response Unit (HMRU) has a multi-function mission in the response, force protection, and support in the State Police role as a law enforcement, interdiction, and prevention agency. HMRU provides response and planning support for chemical, biological, radiological, nuclear, and explosive incidents to include, agent surveillance, detection, evidence collection, sampling and identification of Hazardous Materials/CBRNE materials. HMRU can also provide direct support in decontamination, environmental monitoring, scene management, and resource acquisition.

⁴⁹Miami Dade County,” Miami Dade Police Department Hazardous Materials Crime Unit,” last modified 2010, Miami Dade County, retrieved February 2, 2011, from <http://www.miamidade.gov/mdpd/BureausDivisions/IGB/cis>.

⁵⁰ City of Phoenix, “Phoenix Police Department—Bomb Squad,” last modified 2010, City of Phoenix, retrieved February 2, 2011, from <http://www.ci.phoenix.az.us/police/bomb1.html>.

NJSP HMRU provides round the clock response capabilities to hazardous materials, clandestine laboratories, and CBRN incidents throughout NJ. Its mission is to assist local, other state and federal agencies in determining the extent of the incident and when necessary, document, collect, and analyze any material(s) or hazardous evidence.

NJSP HMRU is highly mobile and carries state of the art diagnostic and field analytical testing equipment with reach back capability. This reach back capability allows for the information and findings in the field to be transmitted and viewed by specialists in a specific field.

HMRU also is tasked to provide CBRN / HazMat training to include: CBRN / HazMat First Responder Awareness, Operations and Technician level training programs, as well as, custom designed responder training programs.⁵¹

These law enforcement HazMat team categories can be further broken down by mission type, as many state law enforcement HazMat teams focus solely on commercial vehicle HazMat enforcement. The Colorado State Patrol is such an example.

4. Colorado State Patrol Hazardous Materials Response Unit

The Colorado State Patrol Hazardous Materials Unit works to improve the overall safety of hazardous material transportation to better protect citizens and the environment. This is accomplished by:

- Safe and efficient movement of hazardous materials on Colorado roadways through enforcement of permitting and routing
- Mutual cooperation with all entities involved in the shipping and transportation of hazardous materials
- Providing prompt response and mitigation resources for on-highway hazardous incidents and support of local government through mutual aid agreements or other formal requests for assistance
- Designation and maintenance of hazardous and nuclear materials transportation routes

⁵¹New Jersey State Police, “New Jersey State Police Hazardous Materials Response Unit,” last modified 2010, New Jersey State Police, retrieved February 2, 2011, from <http://www.state.nj.us/njsp/divorg/homelandsec/hrmu.html>.

- Adoption of permitting, routing, and safe transportation rules and regulations
- Enforcement of applicable laws, rules, and regulations

Program goals are accomplished through the deployment of at least 24 fully trained and equipped troopers (hazardous material specialists). Specialists are deployed in 12, two-person teams assigned throughout the state.⁵²

The diversity of HazMat training and WMD preparedness as demonstrated for local law enforcement is as varied as the four different models described. This diversity also corresponds to municipalities' expectations and requirements of law enforcement agencies at HazMat incidents.

B. EXPLORATION OF THE ADOPTION OF WMD RESPONSE STANDARDS FROM DISCIPLINE-SPECIFIC TO MISSION-CENTRIC

The National Fire Protection Agency is a voluntary, non-regulatory organization accredited through the American National Standards Institute and recognized as the accepted developer of consensus life safety codes, standards, training and education for fire prevention, hazardous materials and other hazards.⁵³ The 2008 revisions of the National Fire Protection Association's (NFPA) Technical Standard 472: Professional Competencies of Responders to Hazardous Materials Incidents protocols acknowledged that multiple first responder disciplines have responsibilities at terrorist incidents involving hazardous materials; the standard was adjusted to be more mission-specific than discipline-specific.⁵⁴ These revisions reflect an understanding of local law enforcement agencies' increased needs to develop stronger HazMat competencies in

⁵² Colorado State Patrol, "Colorado State Patrol Hazardous Materials Unit," last modified 2010, Colorado State Patrol, retrieved February 2, 2011, from <http://csp.state.co.us/hazmat.html>.

⁵³ National Fire Protection Agency, "National Fire Protection Agency," last modified 2010, National Fire Protection Agency, retrieved February 2, 2011, from <http://www.nfpa.org/categoryList.asp?categoryID=495&URL=About%20NFPA/Overview>.

⁵⁴ National Fire Protection Agency, *NFPA 472 Standard for Competence of Responders to Hazardous Materials/ Weapons of Mass Destruction Incidents* (Quincy, MA: National Fire Protection Agency, 2008), retrieved February 2, 2011, from http://www.nfpa.org/catalog/category.asp?category_name=CodesandStandards&Page=1&src=catalog&order_src=B726&gclid=CNqpo-PexLkCFVNo7AodzTsAWw.

order to adequately respond to and successfully manage attacks involving WMDs, whether criminal or terroristic in nature.⁵⁵

C. ANALYSIS OF NATIONAL LAW ENFORCEMENT WMD RESPONSE PREPAREDNESS VERSUS NATIONAL LAW ENFORCEMENT DEPLOYMENT TEAMS

Although the nation's thousands of local law enforcement agencies are independently operated and controlled by local political jurisdictions, the issue of a national law enforcement response force is not equivalent to a national preparedness of local law enforcement. The proposed Law Enforcement Deployment Teams (LEDT) would consist of law enforcement officers who mobilize to conduct police operations in regions which have suffered a breakdown in normal police operations due to a major catastrophe, such as Hurricane Katrina.⁵⁶ The teams would mirror currently existing national response teams such as FEMA's Urban Search and Rescue Task Forces, and would perform investigative duties at large-scale HazMat incidents such as hazardous materials identification and handling.⁵⁷ Local law enforcement communities might benefit from a LEDT at the scene of a prolonged major incident involving compromised local law enforcement response and capabilities, but such a mechanism may not be as efficient or organic as local or regional jurisdictional mutual aid resources for short-term, small-scale terrorist incidents involving chemical/biological/radiological/nuclear materials. This highlights the importance of a credentialing process within a law enforcement WMD response training program—the ability to rapidly verify officers' WMD response skills, knowledge and abilities in “type” and “kind” at a catastrophic incident as described in the NIMS typing system.⁵⁸

⁵⁵Ibid.

⁵⁶ Major Cities Chiefs Association, *Law Enforcement Deployment Teams* (Washington, DC: National Terrorism Policy Center, Federal Emergency Management Agency, 2008).

⁵⁷ Ibid.

⁵⁸ Federal Emergency Management Agency, “NIMS: Resource Management.”

The aforementioned review focused on gaps in federal policies regarding standard protocols, equipment, and training; on various states of local law enforcement WMD incident response capabilities, and the evolution of WMD response standards from discipline-specific to mission-centric.

IV. TOWARD A COMMON STANDARD

A. WHAT WE CAN PREDICT REGARDING FUTURE U.S.WMD INCIDENTS

In January 2010, the bipartisan U.S. Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism gave a follow-up report to their earlier report, *World at Risk*.⁵⁹ The Commission specified four factors that led up to their assessment that a WMD attack would occur within this decade:

1. There is direct evidence that terrorists are trying to acquire weapons of mass destruction.
2. Acquiring WMD fits the tactical profile of terrorists.
3. Terrorists have demonstrated global reach and the organizational sophistication to obtain and use WMD.
4. The opportunity to acquire and use such weapons is growing exponentially because of the global proliferation of nuclear material and biological technologies.⁶⁰

Figure 2 is a graphic utilizing U.S. Federal Bureau of Investigation Hazardous Materials Unit data compiled from 1997 to 2010 depicting FBI response to WMD incidents in the United States.⁶¹ The figures for 1999 were unavailable at the time of this writing, and suspicious “white powder” incidents were given their own category in 2007 separate from the biological incidents category.

⁵⁹ U.S. Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, *Report Card: Government Failing to Protect America from Grave Threats of WMD Proliferation and Terrorism* (Washington, DC: U.S. Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, 2010).

⁶⁰Ibid.

⁶¹ Pat O’Brien (Federal Bureau of Investigation) fax to author, February 8, 2010. Data used for this thesis with permission from the U.S. Federal Bureau of Investigation.

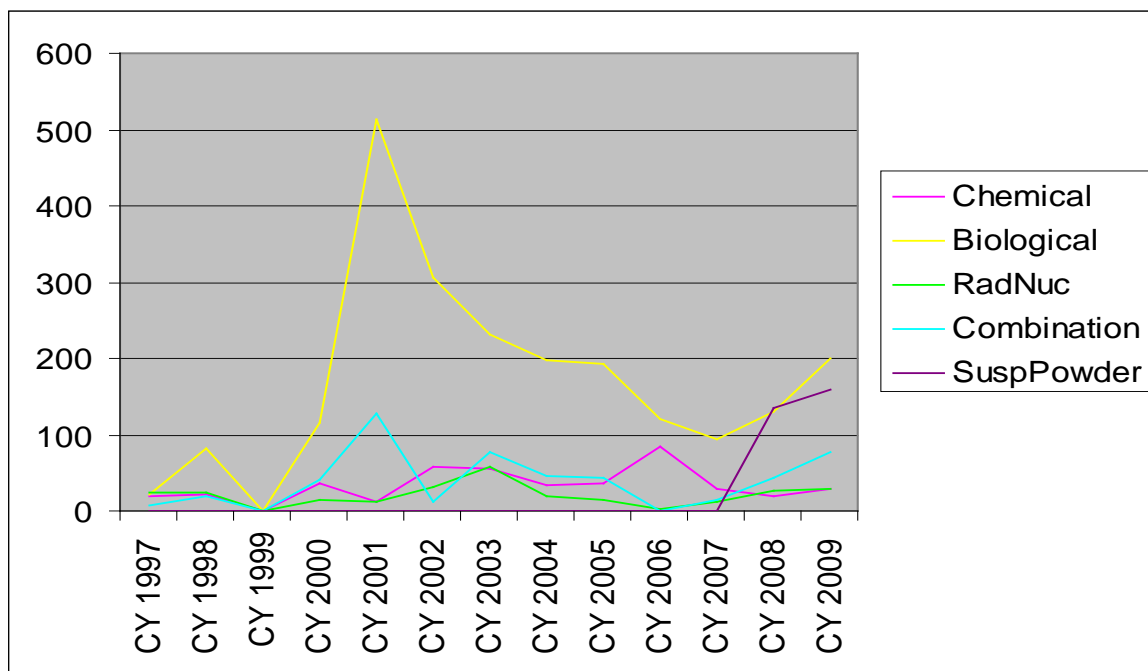


Figure 2. FBI HMRU Number of WMD Incidents in the U.S. from 1997 to 2009

This data indicates an absence of clear patterns, in that one cannot predict with any certainty the nature or number of future WMD threats this nation will likely face; hence WMD preparedness has to be a wide-ranging enterprise. This supports the assertion that a national strategy for local law enforcement training and response to WMD incidents is necessary as local law enforcement agencies currently cannot reasonably prepare for all potential threats, especially WMD threats. In other words, the shared threat of potential WMD attacks is a national one—local law enforcement standardized preparedness and response should be a national effort as well.

B. THE DEVELOPMENT OF NATIONAL TRAINING AND RESPONSE STANDARDS FOR LOCAL LAW ENFORCEMENT AT WMD INCIDENTS

While the *2002 National Strategy for Homeland Security* focused on national standards for emergency response training and preparedness, the *2007 National Strategy* emphasized the importance of local communities utilizing mutual aid to handle incidents beyond their own capabilities:

One of the fundamental response principles is that all incidents should be handled at the lowest jurisdictional level possible [emphasis added].

The initial response to the majority of incidents typically is handled by local responders within a single jurisdiction and goes no further. When incidents exceed available resources, the local or Tribal government may rely on mutual aid agreements with nearby localities or request additional support from the State.⁶²

Mutual aid relies on personnel and equipment having the same standards and capabilities from one jurisdiction to another. These include a variety of HazMat equipment standards related to law enforcement usage.⁶³ Even though the question of equipment standards is being addressed, the idea of standard law enforcement response capabilities at WMD incidents is not. In New York State, a number of law enforcement agencies like the NYPD have developed robust HazMat response capabilities, including the HazMat technician training standard for its Emergency Service Unit (or equivalent) officers, which allows them to control HazMat site operations, assess potential hazards, and identify risks associated with WMD incidents.⁶⁴ Since the first goal of the N.Y.S. homeland security strategy is to “Strengthen CBRNE Detection, Response, and Decontamination,” it would appear consistent with that goal to develop a uniform standard for law enforcement response capacities across not only New York State but regionally and nationally with regard to law enforcement HazMat training, equipment, and capabilities. A number of the New York State Office of Homeland Security strategy objectives for this goal speak to the idea of a standardized response:

- Obj. Coordinate CBRNE response planning to address events that overwhelm jurisdictional capabilities and call for higher-level state or federal resources

⁶² Office of Homeland Security, *National Strategy for Homeland Security*, 33.

⁶³ These hazmat standards include: NIOSH CBRN respiratory standards development, respiratory threats for first responders, verification method for gas mask fit test, chemical/biological personal protective equipment standards, emergency responder protection against TICs/TIMs, and next generation high explosives standards requirements. Federal Emergency Management Agency, *Guidelines for HazMat/WMD Response, Planning and Prevention Training* (Washington, DC: Federal Emergency Management Agency, 2003).

⁶⁴ New York City Police Department, “Inside the NYPD Emergency Service Unit,” last modified September 10, 2013, New York City Police Department, retrieved August 13, 2013, from <http://www.nyc.gov/html/nypd/html/pr/videos.shtml>.

- Obj. Ensure responders have appropriate personal protective equipment (PPE) for safety within a CBRNE environment based on their responsibilities
- Obj. Identify CBRNE equipment needs and purchase DHS-approved equipment to close identified gaps
- Obj. Identify CBRNE training shortfalls and conduct training to close identified gaps
- Obj. Ensure responders have the appropriate knowledge, skills, ability, and equipment to recognize a true WMD situation
- Obj. Maintain and/or replace equipment on the weapons of mass destruction (WMD) trailers that were previously delivered to jurisdictions by the NYS Office of Homeland Security (OHS)
- Obj. Enhance capacity for decontamination both on-scene and at secondary locations, such as hospitals
- Obj. Implement regional solutions to enhance the capabilities of New York state's local Hazardous Materials (HazMat) Response Teams
- Obj. Enhance bomb squad readiness through targeted planning, training, exercise, and equipment acquisition activities
- Obj. Enhance improvised explosive device (IED) awareness and preparedness capabilities through education, detection, and target hardening activities⁶⁵

The development of a uniform law enforcement WMD HazMat response standard could not only benefit the citizens of New York state with a consistent law enforcement HazMat response to WMD HazMat incidents across the state, it would become an important example of how a how a mandatory national standard could benefit the country. It is the author's belief that other law enforcement agencies may not train their officers to this standard for a variety of reasons. There may be the belief that the current capabilities of their jurisdiction's other disciplines (fire / hazmat / environmental protection) are sufficient; or there may be a concern that the resources necessary to develop a law enforcement HazMat capacity would divert spending from other areas; or

⁶⁵ See Appendix B for the complete list of objectives for the NYS Homeland Security: Goal 1, Strengthen CBRNE Detection, Response, and Decontamination. New York State Office of Homeland Security, *New York State Homeland Security Strategy*, 2009, New York State Office of Homeland Security, retrieved January 10, 2010, from www.dhses.ny.gov/media/./2009_nys_homeland_security_strategy.pdf

there may not be enough concern that there is sufficient risk of a WMD incident within their jurisdictions to develop a law enforcement HazMat response capability.

The necessity of this adoption reflects the current disparity of knowledge, skills and abilities in local law enforcement agency WMD/HazMat teams nationally. For instance, OSHA 1910.120 (q) refers to an individual's HazMat training using awareness, operations, and technician level capabilities without referring to how those competencies relate to law enforcement WMD/HazMat team responsibilities at WMD incidents.⁶⁶ There is a compelling need for the development of a mandatory national standard that matches law enforcement agencies' expected HazMat competencies with required law enforcement duties at WMD/HazMat incidents. The adoption of this standard should greatly increase the efficacy, efficiency and utility of same by enabling law enforcement agencies to conduct critical resource sharing at large or complex WMD incidents. The ability of law enforcement agencies to share critical HazMat resources at a large scale WMD incident could dramatically increase the ability of law enforcement agencies to conduct WMD response activities within a hazardous environment. The following two diagrams depict the limitations in resource sharing due to the lack of the same capabilities from local law enforcement agencies. Agencies may utilize federal, state or local personnel assigned to their jurisdiction (Figure3) or may be part of a standalone regional response team (Figure 4).

⁶⁶ U.S. Department of Labor, Office of Safety and Occupational Health, "29 CFR Hazardous Waste Operations and Emergency Response.—1910.120(q)(6)," Office of Safety and Occupational Health, retrieved March 8, 2010, from [http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765#1910.120\(q\)](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765#1910.120(q)).

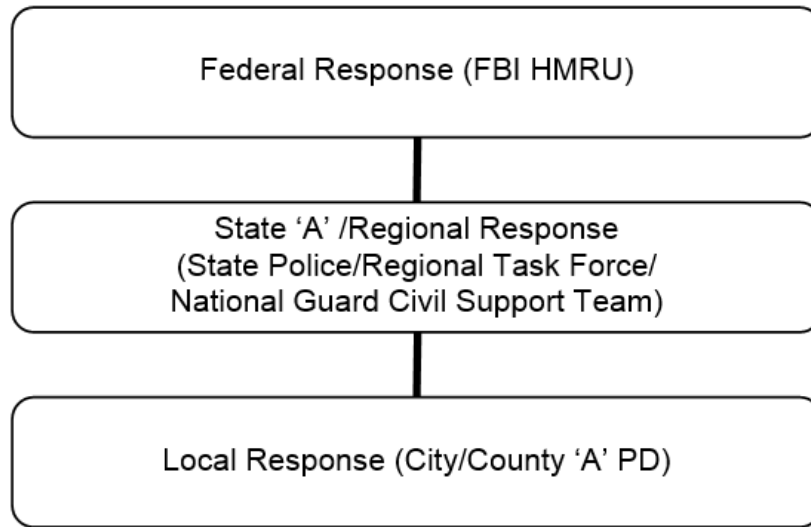


Figure 3. Current Federal/State/Local Agency Resource Sharing Model

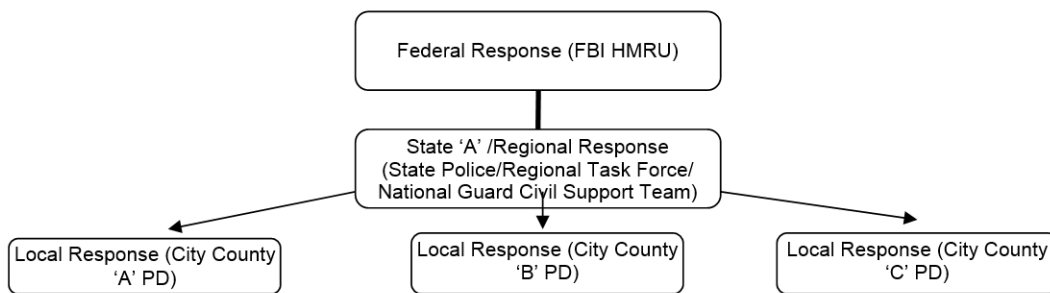


Figure 4. Standalone Regional Response Model

Figure 5 depicts how credentialed law enforcement WMD HazMat teams would be utilized to garner a “force multiplier” effect.

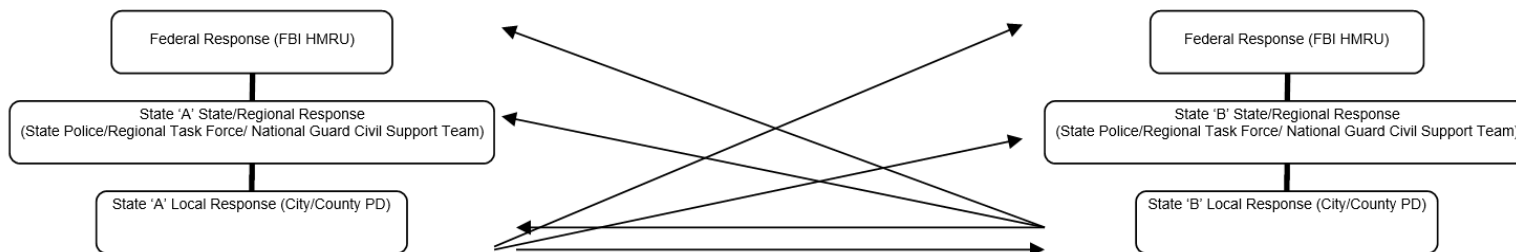


Figure 5. Credentialed Law Enforcement WMD Hazmat Team “Force Multiplier” Model

At a large WMD terrorist incident, geographical or jurisdictional boundaries become meaningless to the affected victims, as CBRN attacks do not necessarily stay within city, county or state boundaries. Terrorists need only the ability, willingness and opportunity to cause an attack using CBRN, which is why it is critical that law enforcement agencies locally, regionally and nationally have the ability to respond with equivalent capabilities, thereby robbing terrorists of the opportunity to find a weak link in a state or region's law enforcement WMD preparedness and response efforts.

C. U.S. BOMB SQUAD PROGRAM AS AN EXAMPLE OF A NATIONAL PREPAREDNESS APPROACH

A credentialing process would ensure local law enforcement WMD/HazMat teams would respond to WMD incidents with the same capabilities, as bomb squads currently do locally, regionally and nationally. Bomb squads are accredited by the Federal Bureau of Investigation and overseen by the National Bomb Squad Commanders Advisory Board, which serves as a leadership component of the United States bomb squad program, with the following responsibilities:

- Serves as the recognized point of contact on all matters related to U.S. Bomb Squads.
- Resolving issues regarding certification and accreditation.
- Making recommendations concerning HDS and other training.
- Reviewing research and development needs.
- Acting as a steering committee for bomb squad commanders' conferences.
- Examining issues related to the FBI's Special Agent bomb technician liaison program and other federal programs that are of importance to the board and bomb squads.
- Develop and publish long range strategic plans and recommendations for bomb squad development.⁶⁷

The very first preparedness tasks and measures/metrics to be utilized for explosive device response operations include the following activities:

⁶⁷ National Bomb Squad Commanders Advisory Board, "About NBSCAB," last modified 2009, retrieved August 14, 2009, from http://www.nbscab.org/NBSCAB/nbscab_ex.php.

1. Critical Tasks

- Res.B2c 1—Develop *procedures* and *standardized training* to deal with terrorist events, including WMD suicide bombers, vehicle and radio controlled improvised explosive devices.
- Res.B2c 1.1—Ensure all squads remain *accredited* and technicians *certified*.
- Res. B2c 1.2—Assist squads in achieving a *Type I* rating [emphasis added].⁶⁸

2. Preparedness Measures

- Bomb squad is *accredited* by the FBI to *standards* set by the National Bomb Squad Commanders Advisory Board.
- Procedures exist for dealing with suicide bombers
- Procedures exist for dealing with vehicle-borne improvised explosive devices⁶⁹

The national bomb squad community has demonstrated the importance of a credentialing process for specialty law enforcement units, and it is the author's belief that local law enforcement agencies can address a major deficiency in the current national strategy toward terrorism local law enforcement response involving WMDs—a lack of a credentialing system for law enforcement WMD response personnel to meet equivalent minimum training competencies. Using the U.S. bomb squad program's national approach of utilizing the same training, equipment, and standard operating procedures to deal with incidents involving explosives could be very useful in designing a similar program for local law enforcement personnel who respond to incidents involving chemical/biological/radiological/nuclear materials, as the mechanisms to do so already exist. The National Domestic Preparedness Consortium (NDPC) is an excellent platform, as it provides specialized, tailored training to enhance the capacity of emergency responders to handle incidents of national significance, especially terrorist incidents involving chemical, biological, radiological, nuclear and explosive weapons of mass

⁶⁸ Ibid.

⁶⁹ Morris County, New Jersey Office of Emergency Management, *Explosive Device Response Operations*, 2005, Morris County, New Jersey Office of Emergency Management, retrieved March 3, 2010, from http://www.morrisoem.org/blogs/Explosive_Device.pdf.

destruction.⁷⁰ The NDPC executes the Department of Homeland Security's National Training Program through a professional alliance of several members:

1. Center for Domestic Preparedness (CDP) in Anniston, Alabama,
2. New Mexico Institute of Mining and Technology (New Mexico Tech),
3. Louisiana State University's Academy of Counter-Terrorist Education (National Center for Biomedical Research and Training),
4. Texas A&M University National Emergency Response and Rescue Training Center (TEEX)
5. Department of Energy's Nevada Test Site (NTS), and the
6. Transportation Technology Center, Inc. (TTCI).⁷¹

These organizations are nationally recognized as experts in bioterrorism, chemicals, and radiological/nuclear devices. NDPC reflects the missions of all these organizations with its commitment to provide quality, cost-effective counter-terrorism training to the nation's emergency responders. The National Training Program facilitates identification of training needs, based on the tasks and capabilities defined in the "universal task list"(UTL) and "target capabilities list"(TCL).⁷² Based on these needs, and by utilizing existing programs as much as possible, training is created so the homeland security community develops the necessary knowledge, skills, and abilities to appropriately prevent, prepare for respond and mitigate both man-made and natural disasters. These programs have trained over 1,500,000 first responders since the NDPC's inception in 1998, with a mission statement to:

⁷⁰National Domestic Preparedness Consortium, "National Domestic Preparedness Consortium," last modified 2010, National Domestic Preparedness Consortium, retrieved September 4, 2010, from <http://www.ndpc.us/>.

⁷¹ Ibid.

⁷² U.S. Department of Homeland Security, "U.S. Department of Homeland Security National Training Program Grant Application Kit," 2005, U.S. Department of Justice's Office of Justice Programs, retrieved September 4, 2010, from <http://www.ojp.usdoj.gov/archives/solicitations/docs/fy05hsntp>.

...enhance the preparedness of federal, state, local, and tribal emergency responders/first receivers and teams, including non-governmental organizations and the private sector, to reduce the Nation's vulnerability to incidents involving weapons of mass destruction, terrorism, and all-hazard high-consequence events by developing, delivering, and assessing plans, training, technical assistance, and exercises.⁷³

The NDPC has demonstrated the ability to successfully train local law enforcement personnel at the national level. The Federal Bureau of Investigation's HazMat Response Unit has the mission of:

...responding to criminal acts and incidents that involve hazardous materials (HAZMAT). The unit develops technical proficiency and readiness for crime scene and evidence-related operations in cases involving chemical, biological, and radiological materials and wastes and trains U.S. and international law enforcement in these skills. It also provides site safety oversight of FBI personnel operating in high hazard crime scenes."⁷⁴

The NDPC, in collaboration with the Federal Bureau of Investigation's Hazardous Materials Response Unit, could leverage NDPC's currently existing HazMat training programs to create a national local law enforcement (procedural/equipment/HazMat) training and credentialing process specific to law enforcement responsibilities at terrorist incidents involving CBRN. This would then allow for significantly increased mutual aid of law enforcement WMD response teams at large-scale terrorist incidents that involve chemical/biological/radiological/nuclear materials.

D. THE UNITED KINGDOMEXAMPLE: LAW ENFORCEMENT CBRN TRAINING

Both the United States and the United Kingdom have historically faced internal and external terrorist threats from a variety of sources. The British government's official strategy for combating international terrorism, known as CONTEST, is described by the United Kingdom's Office for the Security and Counter-Terrorism in the Home Office as

⁷³U.S. Federal Emergency Management Agency, (2010). *National Domestic Preparedness Consortium*, retrieved September 4, 2010, from <http://www.ndpc.us/>

⁷⁴ U.S. Department of Justice, "Federal Bureau of Investigation—Hazardous Materials Response," last modified 2010, U.S. Federal Bureau of Investigation, retrieved September 4, 2010, from <http://www.fbi.gov/hq/lab/html/hmru1.htm>.

consisting of countering chemical, biological, radiological and nuclear terrorism through activity in four areas:

1. *Prevent*—to stop people becoming terrorists or supporting violent extremism;
2. *Pursue*—to stop terrorist attacks;
3. *Protect*—to strengthen our protection against terrorist attack, and;
4. *Prepare*—where an attack cannot be stopped, to mitigate its impact.⁷⁵

The United Kingdom utilizes a national CBRN training center to prepare its officers to operate safely at such incidents without jeopardizing personal safety or the mission at hand. The Police National CBRN Centre's doctrine states specifically that its training "provides detailed information that is common to all CBRN trained and equipped police officers irrespective of rank or role....[and] forms the basis for common national standards of police CBRN training across the entire UK."⁷⁶ It further states, "there is no place in counter-CBRN policing procedures for regional variations. Mutual aid between forces will prove to be an essential tenet of the police response. The safety of police CBRN RESPONDERS is paramount."⁷⁷ By 2005, nearly 7,000 UK police officers had received training from the Centre to ensure they had the necessary skills and equipment to respond effectively to CBRN incidents.⁷⁸ Most importantly, the training, from the basic to advanced, espouses clear delineations of the roles of the responding law enforcement officers to the CBRN incident, including scene assessment, security, and responsibility for overall coordination of the emergency response and initial safety management within inner cordons or perimeters at terrorist incidents.⁷⁹

⁷⁵ HM Government, Office for the Security and Counter-Terrorism in the Home Office, *The United Kingdom's Strategy for Countering Chemical, Biological, Radiological and Nuclear (CBRN) Terrorism* (London: Crown, 2010).

⁷⁶ Police National CBRN Centre, *Police National CBRN Operational Procedures Manual* (London: HM Government, 2004).

⁷⁷ Ibid.

⁷⁸ Sergio Bonin, *International Biodefense Handbook 2007* (Zurich: Center for Security Studies, 2007).

⁷⁹ Police National CBRN Centre, *Police National CBRN Operational Procedures Manual*.

E. UNITED STATES' LAW ENFORCEMENT WMD TRAINING

The United States' counter terrorism strategy as described in the *2007 National Strategy for Homeland Security* is quite similar to the U.K. national strategy:

- Prevent and disrupt terrorist attacks
- Protect the American people our critical infrastructure, and key resources
- Respond to and recover from incidents that do occur
- Continue to strengthen the foundation to ensure our long-term success⁸⁰

If a similarly empowered American equivalent to the United Kingdom's Police National CBRN Centre had created a nationally recognized standard for law enforcement WMD response, the nation's law enforcement community would be able to provide resilient regional responses to WMD incidents as opposed to current disjointed jurisdictional responses, and share critical law enforcement HazMat resources in a manner as described by the National Incident Management System.⁸¹ Thus the potential development of a mandatory common standard regarding American law enforcement response to WMD incidents, with an emphasis on the necessity of training up to and including the HazMat technician level, would likely mirror the aforementioned aspects of the United Kingdom model.

⁸⁰ Homeland Security Council, *National Strategy for Homeland Security* (Washington, DC: Homeland Security Council, 2007).

⁸¹ Federal Emergency Management Agency, *Typed Resource Definitions: Law Enforcement and Security Resources* (Washington, DC: U.S. Department of Homeland Security, 2007).

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V. RECOMMENDATIONS

The goal of this research was to examine the role of local law enforcement personnel at weapons of mass destruction and hazardous materials incidents with regard to WMD training, standards and preparedness, and to identify gaps and problems in current local law enforcement WMD response preparedness. Different models of local law enforcement WMD response were examined to compare with the New York City Emergency Service Unit model, and the U.S. Bomb Squad and United Kingdom law enforcement CBRN training programs were examined as examples of successful national preparedness response programs. This research attempts to provide an understanding of whether national standards for local law enforcement WMD preparedness and response is an appropriate goal for the federal government.

The research question asked: How does current local law enforcement WMD response preparedness align with current WMD threats?

A. STANDARDIZED LAW ENFORCEMENT WMD TRAINING, CERTIFICATION AND EQUIPMENT

Current and future law enforcement challenges include potential WMD threats to their assigned jurisdictions regardless of historic trends or patterns. Law enforcement personnel should receive standardized WMD training and certification to allow for resource (personnel) sharing at large-scale WMD incidents, regardless if the law enforcement WMD response effort is a single, multi-agency, or multi-jurisdictional response. It is also important that law enforcement agencies become “literate in the language” of WMD/hazmat incident response to allow for appropriate tactical decision-making to render WMD incident scenes secure for other rescue personnel to operate. Standardized WMD response equipment would be appropriate to ensure maximum utility and safety of multi-jurisdictional and/or multi-agency personnel working collaboratively at a large-scale WMD incident. The NYPD’s Emergency Service Unit practices this citywide by having ten different geographic areas patrolled by ten separate entities known as squads or trucks. These individual squads or trucks have the same equipment, and the

personnel assigned to them have the same training and certifications, although their experience levels are as varied as the amount of time each member has assigned to the unit. Ultimately, if there are not enough individuals assigned to a truck, other officers from other trucks can and are assigned to work in the truck lacking personnel; in a large-scale incident, the traditionally small amount of personnel with the training, competencies and equipment to address a WMD incident will need to work together to maximize the amount of people saved. This can only be done if similar training, equipment and certifications are used by all involved municipalities.

**B. ADDITIONAL RESEARCH NEEDED TO DEVELOP SUCCESSFUL
NATIONAL STRATEGIES**

Additional research should be undertaken to develop successful national strategies to standardize law enforcement training and equipment to prevent, defend against, and defeat future WMD terrorism threats that threaten this country. Finally, the role of law enforcement at WMD incidents must be further defined, refined and standardized to develop a common vision toward a common standard to successfully defeat an increasingly common threat.

APPENDIX A. 2008 NFPA 472 OPERATIONS LEVEL OPERATIONS⁸²

Table A.5.1.1.1 NFPA 472 Operations Level Responder Matrix

Responders	Competencies						
	Use PPE	Perform Technical or Mass Decontamination*	Perform Product Control	Perform Air Monitoring	Perform Victim Rescue and Removal	Preserve Evidence and Perform Sampling	Respond to Illicit Lab Incident
Fire fighters expected to perform basic defensive product control measures	X	X	X	—	—	—	—
Emergency responders assigned to a decontamination company or decontamination strike force	X	X	—	—	—	—	—
Emergency responders assigned to a unit tasked with providing rapid rescue and extraction from a contaminated environment	X	X	—	X	X	—	—
Emergency responders assigned to provide staffing or support to a hazardous materials response team	X	X	X	X	X	—	—
Law enforcement personnel involved in investigation of criminal events where hazardous materials are present	X	X	—	X	—	X	X
Law enforcement personnel involved in investigation of incidents involving illicit laboratories	X	X	—	X	—	X	X
Public health personnel involved in the investigation of public health emergencies	X	X	—	—	—	X	—
Environmental health and safety professionals who provide air monitoring support	X	X	—	X	—	—	—

*The scope of the decontamination competencies would be based on whether the mission involves the responder being the “customer” of the decontamination services being provided or is part of those responders who are responsible for the set-up and implementation of the decontamination operation.



2008 Edition

⁸²National Fire Protection Agency, *NFPA 472*.

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APPENDIX B. NYS 2009 HOMELAND SECURITY STRATEGY: GOAL 1

Goal 1: Strengthen CBRNE Detection, Response, and Decontamination Capabilities⁸³

- Obj. Ensure that CBRNE Response Plans, including County HazMat Plans, are updated regularly
- Obj. Coordinate CBRNE response planning to address events that overwhelm jurisdictional capabilities and call for higher-level State or federal resources
- Obj. Ensure responders have appropriate Personal Protective Equipment (PPE) for safety within a CBRNE environment based on their responsibilities
- Obj. Identify CBRNE equipment needs and purchase DHS-approved equipment to close identified gaps
- Obj. Identify CBRNE training shortfalls and conduct training to close identified gaps
- Obj. Ensure responders have the appropriate knowledge, skills, ability, and equipment to recognize a true WMD situation
- Obj. Conduct multi-disciplinary, multi-jurisdictional HSEEP-compliant exercises to test CBRNE plans, protocols, and response procedures
- Obj. Maintain and/or replace equipment on the Weapons of Mass Destruction (WMD) trailers that were previously delivered to jurisdictions by the NYS Office of Homeland Security (OHS)
- Obj. Enhance capacity for decontamination both on-scene and at secondary locations, such as hospitals
- Obj. Implement regional solutions to enhance the capabilities of New York State's local Hazardous Materials (HazMat) Response Teams
- Obj. Enhance bomb squad readiness through targeted planning, training, exercise, and equipment acquisition activities
- Obj. Enhance Improvised Explosive Device (IED) awareness and preparedness capabilities through education, detection, and target hardening activities
- Obj. Enhance radiological capabilities through continued participation in the "Securing the Cities" initiative in the NYC metropolitan area
- Obj. Using the model provided by the "Securing the Cities" initiative, develop and implement the State Radiation Defense Plan to build statewide radiological detection capabilities
- Obj. Develop and implement a Radioactive Materials Source Security Program in New York State

⁸³ NYS Homeland Security: Goal 1, Strengthen CBRNE Detection, Response, and Decontamination, New York State Office of Homeland Security, *New York State Homeland Security Strategy*.

- Obj. Develop a statewide capability to monitor and assess environmental health impacts of a CBRNE event
- Obj. Enhance laboratory capability and capacity for the detection of chemical, biological, radiological, and nuclear threat agents



APPENDIX C. 2008 U.S. ANNUAL CENSUS DATA

2008 U.S. Annual Census Estimates of Resident Populations of Cities and States with Selected U.S. Cities' and States' Police Department Uniformed Officer Population Estimates⁸⁴

Rank by Pop.	City	State	City Population	State Population	City PD Size	City Police Hazmat	State Police/ Highway Patrol Size	State Police Hazmat
1	New York	New York	8,363,710	19,490,297	36,200	1	4,700	1
2	Los Angeles	California	3,833,995	36,553,215	9,900	1	7,140	1
3	Chicago	Illinois	2,853,114	12,901,563	13,400	0	2,100	0
4	Houston	Texas	2,242,193	24,326,974	5,100	0	7,600	0
5	Phoenix	Arizona	1,567,924	6,500,180	3,500	1	1,125	1
6	Philadelphia	Pennsylvania	1,447,395	12,448,279	6,600	1	4,200	1
7	San Antonio	Texas	1,351,305	X	2,000	0	X	X
8	Dallas	Texas	1,279,910	X	3,100	0	X	X
9	San Diego	California	1,279,329	X	2,100	0	X	X
10	San Jose	California	948,279	X	1,400	1	X	X
11	Detroit	Michigan	912,062	10,003,422	3,500	0	1,860	1
12	San Francisco	California	808,976	X	1,970	0	X	X
13	Jacksonville	Florida	807,815	18,328,340	2,950	0	1,530	0
14	Indianapolis	Indiana	798,382	6,376,792	1,580	0	1,310	1
15	Austin	Texas	757,688	X	1,400	0	X	X

⁸⁴ U.S. Census Bureau, "Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas," 2010, U.S. Census Bureau, <http://www.census.gov/popest/metro/tables/2009/CBSA-EST2009-01.xls>.

Rank by Pop.	City	State	City Population	State Population	City PD Size	City Police Hazmat	State Police/ Highway Patrol Size	State Police Hazmat
16	Columbus	Ohio	754,885	11,485,910	1,890	0	1,500	1
17	Fort Worth	Texas	703,073	X	1,540	0	X	X
18	Charlotte	North Carolina	687,456	9,222,414	1,620	0	1,510	1
19	Memphis	Tennessee	669,651	6,214,888	2,100	0	920	1
20	Baltimore	Maryland	636,919	5,633,597	3,100	0	1,510	1
21	El Paso	Texas	613,190	X	1,100	0	X	X
22	Boston	Massachusetts	609,023	6,497,967	2,050	0	2,200	0
23	Milwaukee	Wisconsin	604,477	5,627,967	2,000	0	510	1
24	Denver	Colorado	598,707	4,939,456	1,460	0	680	1
25	Seattle	Washington	598,541	6,549,224	1,285	0	1,060	1
26	Nashville	Tennessee	596,462	X	1,300	0	X	X
27	Washington	D.C.	591,833	591,833	4,050	1	0	0
28	Las Vegas	Nevada	558,383	2,600,167	2,600	0	420	1
29	Portland	Oregon	557,706	3,790,060	1,150	0	620	0
30	Louisville	Kentucky	557,224	4,269,245	1,200	0	960	1
31	Oklahoma City	Oklahoma	551,789	3,642,361	1,050	0	810	1
32	Tucson	Arizona	541,811	X	1,050	0	X	X
33	Atlanta	Georgia	537,958	9,685,744	1,600	0	1,000	0
34	Albuquerque	New Mexico	521,999	1,984,356	950	0	550	1
35	Fresno	California	476,050	X	810	0	X	X
36	Sacramento	California	463,794	X	1,560	0	X	X
37	Long Beach	California	463,789	X	985	0	X	X
38	Mesa	Arizona	463,552	X	830	0	X	X

Rank by Pop.	City	State	City Population	State Population	City PD Size	City Police Hazmat	State Police/ Highway Patrol Size	State Police Hazmat
39	Kansas City	Missouri	451,572	5,911,605	1,400	0	1,100	0
40	Omaha	Nebraska	438,646	1,783,432	820	0	480	1
41	Cleveland	Ohio	433,748	X	1,600	0	X	X
42	Virginia Beach	Virginia	433,746	7,769,089	780	1	1,960	1
43	Miami	Florida	413,201	X	1,100	1	X	X
44	Oakland	California	404,155	X	800	0	X	X
45	Raleigh	North Carolina	392,552	X	770	0	X	X
46	Tulsa	Oklahoma	385,635	X	800	1	X	X
47	Minneapolis	Minnesota	382,605	5,220,393	800	0	530	1
48	Colorado Springs	Colorado	380,307	X	660	0	X	X
49	Honolulu	Hawaii	374,676	1,288,198	2,130	1	0	0
50	Arlington	Texas	374,417	X	750	0	X	X
51	Wichita	Kansas	366,046	2,802,134	670	1	540	1
52	St. Louis	Missouri	354,361	X	1,900	1	X	X
53	Tampa	Florida	340,882	X	1,000	1	X	X
54	Santa Ana	California	339,130	X	500	0	X	X
55	Anaheim	California	335,288	X	400	0	X	X
56	Cincinnati	Ohio	333,336	X	1,050	0	X	X
57	Bakersfield	California	321,078	X	300	0	X	X
58	Aurora	Colorado	319,057	X	650	1	X	X
59	New Orleans	Louisiana	311,853	4,410,796	1,400	0	1,060	1
60	Pittsburgh	Pennsylvania	310,037	X	1,000	0	X	X

Rank by Pop.	City	State	City Population	State Population	City PD Size	City Police Hazmat	State Police/ Highway Patrol Size	State Police Hazmat
61	Riverside	California	295,357	X	390	0	X	X
62	Toledo	Ohio	293,201	X	500	0	X	X
63	Stockton	California	287,037	X	440	0	X	X
64	Corpus Christi	Texas	286,462	X	400	0	X	X
65	Lexington	Kentucky	282,114	X	570	1	X	X
66	St. Paul	Minnesota	279,590	X	650	0	X	X
67	Anchorage	Alaska	279,243	686,293	370	0	380	0
68	Newark	New Jersey	278,980	8,682,661	1,300	0	2,930	1
69	Buffalo	New York	270,919	X	720	0	X	X
70	Plano	Texas	267,480	X	350	0	X	X
71	Henderson	Nevada	252,064	X	390	0	X	X
72	Lincoln	Nebraska	251,624	X	260	0	X	X
73	Fort Wayne	Indiana	251,591	X	460	0	X	X
74	Glendale	Arizona	251,522	X	450	0	X	X
75	Greensboro	North Carolina	250,642	X	670	0	X	X
76	Chandler	Arizona	247,140	X	340	0	X	X
77	St. Petersburg	Florida	245,314	X	540	0	X	X
78	Jersey City	New Jersey	241,114	X	890	0	X	X
79	Scottsdale	Arizona	235,371	X	430	1	X	X
80	Norfolk	Virginia	234,220	X	750	0	X	X
81	Madison	Wisconsin	231,916	X	400	0	X	X
82	Orlando	Florida	230,519	X	700	0	X	X
83	Birmingham	Alabama	228,798	4,661,900	750	0	680	0

Rank by Pop.	City	State	City Population	State Population	City PD Size	City Police Hazmat	State Police/ Highway Patrol Size	State Police Hazmat
84	Baton Rouge	Louisiana	223,689	X	720	1	X	X
85	Durham	North Carolina	223,284	X	510	1	X	X
86	Laredo	Texas	221,659	X	420	0	X	X
87	Lubbock	Texas	220,483	X	360	0	X	X
88	Chesapeake	Virginia	220,111	X	400	0	X	X
89	Chula Vista	California	219,318	X	240	0	X	X
90	Garland	Texas	218,577	X	300	0	X	X
91	Winston-Salem	North Carolina	217,600	X	500	0	X	X
92	North Las Vegas	Nevada	217,253	X	450	0	X	X
93	Reno	Nevada	217,016	X	360	0	X	X
94	Gilbert	Arizona	216,449	X	220	0	X	X
95	Hialeah	Florida	210,542	X	375	0	X	X
96	Arlington	Virginia	209,969	X	365	0	X	X
97	Akron	Ohio	207,510	X	800	0	X	X
98	Irvine	California	207,500	X	160	0	X	X
99	Rochester	New York	206,886	X	830	0	X	X
100	Boise	Idaho	205,314	1,523,816	325	0	290	0
			60,442,055	274,404,568	173,315	18	55,765	23

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